State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

To: CHAIR AND COMMISSIONERS

CTC Meeting: June 16-17, 2004

Reference No.: 2.2a.
Action Item

From: ROBERT L. GARCIA
Chief Financial Officer

Prepared by: Gary R. Winters
Division Chief
Environmental Analysis

Ref: **SUMMARY – NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT, ROUTE 101 IN MENDOCINO COUNTY – REALIGN HIGHWAY NEAR LEGGETT**

ISSUE:

The California Transportation Commission (Commission) is being asked to review and comment at the June 2004 Commission meeting on the following Notice of Preparation (NOP):

- 01-Men-101, KP 159.2/R162.2 (PM 98.9/R100.8). Realign highway near Leggett. The proposed project would realign US 101 to bypass a rockslide in Mendocino County.

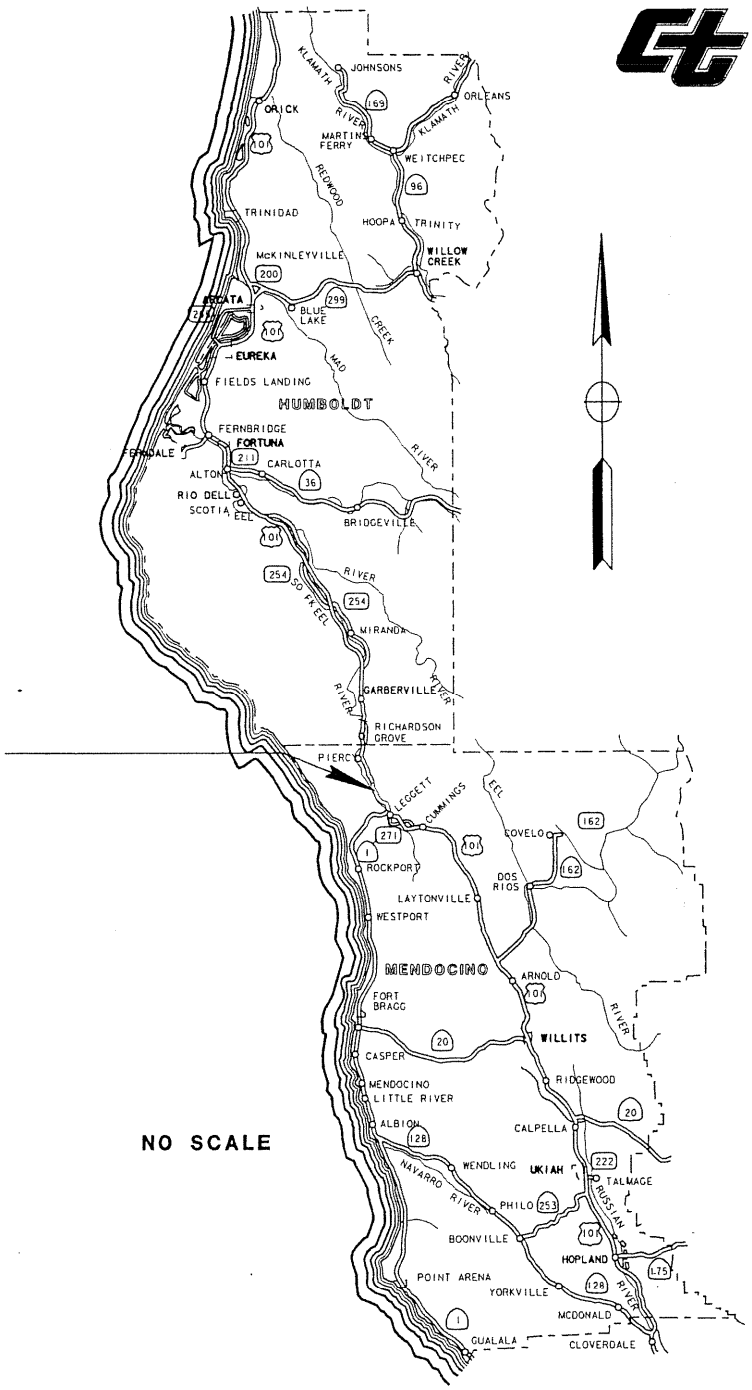
PROGRAMMING:

This project is fully funded in the 2004 State Highway Operation and Protection Program (SHOPP) for $75,846,000 for construction in FY 2006-07.

ALTERNATIVES BEING CONSIDERED:

- No-Build.
- Alternative 1 would relocate US 101 by constructing two bridges and a through-cut on the hillside across the South Fork of the Eel River from the existing roadway. This alternative would require acquisition of right of way in the locations of the through-cut and the two bridge abutments. The alignment would require removal of 18 or more redwood trees, five to six of which are directly in front of Campbell Brothers Confusion Hill. The total capital cost is estimated at $55-$70 million.
- Alternative 2 is similar to Alternative 1. It would relocate US 101 by constructing two bridges and a through-cut. It begins south of Alternative 1 and includes a slight realignment of an existing compound curve. An approximately 100-meter (328-foot) long retaining wall, two to seven meters (6.5 to 23 feet) high, would be needed at the curve. This alignment would remove four to five redwood trees, and US 101 would diverge from its present alignment approximately 80 meters (262 feet) south of Campbell Brothers Confusion Hill. An at-grade intersection would be constructed to maintain access to the Redwoods River

RELOCATION OF ROUTE 101 AT CONFUSION HILL



PROJECT LOCATION

NO SCALE

ATTACHMENT A

SCH NO. _____

NOTICE OF PREPARATION

From: California Dept. of Transportation
P.O. Box 3700
Eureka, CA 95502-3700

Subject: **Notice of Preparation of a Draft Environmental Impact Report**
Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

Project Title: Confusion Hill Highway Relocation Project

Project Location: State Route 101, KP 159.2/R162.2 (PM 98.9/R100.8) approximately 13km (8 miles) north of Leggett in Mendocino County

Project Description: Construction of a two-lane conventional highway facility that would bypass an existing rockslide near Confusion Hill

This is to inform you that the California Department of Transportation will be the lead agency and will prepare an environmental impact report for the project described below. Your participation as a responsible agency is requested in the preparation and review of this document.

We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

A more detailed project description, location map, and the potential environmental effects are contained in the attached materials.

A copy of the Initial Study is attached.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please direct your response to: Tim Ash Telephone (707) 445-6420 at the address shown above. Please supply us with the name for a contact person in your agency.

Date April 29, 2004

Signature _____

Title Chief, Environmental Management Branch E-2
Caltrans North Region

NOTICE OF PREPARATION
OF A
DRAFT ENVIRONMENTAL IMPACT REPORT

CONFUSION HILL
U.S. HIGHWAY 101 RELOCATION PROJECT
MENDOCINO COUNTY

01-MEN-101-KP 159.2/R 162.2
(PM 98.9/R 100.8)
EA 01-397511

Lead Agency:
California Department of Transportation
P.O. Box 3700
Eureka, CA 95502-3700
Contact: Tim Ash, Environmental Branch Chief
707.445.6420

April 2004

Introduction

The proposed project is a two-lane conventional highway segment of US 101 (MEN 101-KP 159.2/R162.2 [PM 98.9/R100.8]) in northern Mendocino County (See Attachment A). The project proposes to relocate approximately 3 kilometers (1.9 miles) of US 101 to the west to avoid an active rockslide area located approximately 13 km (8 miles) north of Leggett and 30 km (18.5 miles) south of Garberville. Large block movement results in frequent road closures and high maintenance costs at this location, commonly referred to as "Confusion Hill". The project will likely consist of constructing two bridges and a through-cut that relocates the route across the Eel River. The estimated cost to construct this project is $65 million. This project is to be funded through the Emergency Relief program.

Background

- *Project History*

A Project Study Report (PSR) was initiated in the spring of 1999 to propose a solution to the unreliability of US 101 through the Confusion Hill slide area. Frequent road closures due to debris fall and slope movement are a continual maintenance problem for this portion of US 101. In 2001, the cost to stabilize the roadway was $3.2 million and estimated costs of vehicle delays were $665,000. Costs to keep the route open continue to increase, in 2002/2003, construction costs exceeded $9 million and vehicle delay costs were estimated near $2 million.

The PSR approved in June of 2001 recommended proceeding with project approval and development of an environmental document for realignment of the roadway outside the slide area at Confusion Hill. The project was determined to be consistent with State and Regional transportation plans and would facilitate goods movement along the route.

In August of 2003, Caltrans acquired $72 million in emergency relief funds for the permanent relocation and restoration of slide-damaged U.S. Highway 101 at Confusion Hill in Mendocino County. The Federal Highway Administration (FHWA) allocated $65 million for the permanent relocation of the highway, and another $7 million for the emergency re-opening work that has occurred since winter 2002. The funding from FHWA requires that Caltrans further investigate an alternative for maintaining the existing alignment along with relocation alternatives to meet the purpose and need of the project.

- *Existing Facilities*

US 101 traverses the entire length of District 1, from the Sonoma/Mendocino County line through Mendocino, Humboldt, and Del Norte Counties to the Oregon border. This route, known as the Redwood Highway, is considered the "lifeline" of the North Coast. Functionally classified as a rural principal arterial, it is part of the California Freeway and Expressway System and is included in the National Highway System (NHS). US 101 is also designated as part of the "SHELL" system (Sub-system of Highway for the movement of Extra-Legal permit Loads). The route is also a high emphasis and focus route on the Interregional Road System (IRRS).

Maintaining US 101 between the San Francisco Bay Area and Oregon is critical to the economic well being of this area because it carries high volumes of commercial trucking year round and recreational traffic during the summer months. Developing improvements to assure all weather dependability is essential to the route.

The proposed project limits begin approximately 3 km (1.9 miles) south of Red Mountain Creek and proceeds north past the Tree House, Redwoods River Resort, Campbell Brothers Confusion Hill and Red Mountain Creek to connect with a 4-lane freeway at 500 m (1640 ft) north of Red Mountain Creek. This segment of US 101 is a curvilinear alignment with curves having a design speed as low as 50 km/hr (30 mph). Lane widths are typically 3.6 m (12 ft). Paved shoulders widths are less than 1.2 m (4 ft) wide with some locations having no paved shoulder.

Purpose and Need

The project is needed because the route is not dependable due to frequent closures, high maintenance costs, and the existing route's location on an active rockslide.

The slide is approximately 915 m (3000 ft) wide at the roadway level and more than 335 m (1100 ft) high measured from its toe at the river. The roadway itself is 43 m (141 ft) above the river. The slide is thousands of years old, and has been causing increasing maintenance and repair work on the roadway for the last 17 years. Roadway slipouts, retaining wall failures, and debris flows onto the highway have been occurring with greater frequency and magnitude in recent years. This slide is progressively losing strength, and the continued movement increases the potential for longer roadway closures and more extensive highway repairs in the future.

The purpose of the project is to provide a reliable route at this segment of US 101 at the Confusion Hill slide area, and to keep US 101 open to vehicular traffic, including large commercial trucks, emergency vehicles, and seasonal recreational travelers.

Project Description

The overall project would involve construction of a two-lane conventional highway facility that would bypass the slide by crossing and re-crossing the South Fork of the Eel River to the west of the existing alignment. The new facility would have two 3.6 m (12 ft) lanes with 2.4 m (8 ft) shoulders and a bridge at each of the two river crossings. The bridges would be approximately 13 m (40 ft) wide and consist of two 3.6 m (12 ft) lanes and 2.4 m (8 ft) shoulders, and all would have see-through bridge railing.

The bridge on the southern end of the project would be constructed using a segmental bridge construction method. This construction method must be used because the maximum feasible height of falsework is approximately 45m (150 ft). Depending upon the alternative alignment, the height of the south bridge ranges from 70 to 80m (230 to 260 ft) above the river. The bridge at the northern end of the project would be approximately 45m (150 ft) high and would be constructed using falsework. Construction of the two bridges is estimated to take approximately two years to complete. Details such as bridge rail type and bridge appearance have yet to be determined. The

project also would require disposal sites to accommodate approximately 300 000 cubic meters (392,500 cubic yards) of excess material, and abandonment of the existing roadway.

Unless noted otherwise, all project alternatives (see attachment) would be as described above, the main difference being the precise location of the bypass alignment. Also common to each alternative is the method used to categorize the redwood trees to be removed. Only those trees 0.9 m (3 ft) or greater in diameter at breast height (DBH--1.5 m (5 ft) above ground level) were identified for the purposes of evaluation.

Alternatives

- **Alternative 1 (black):** This alternative would relocate US 101 by constructing two bridges and a through-cut on the hillside across the South Fork of the Eel River from the existing roadway. This alternative would require acquisition of right of way in the locations of the through-cut and two bridge abutments. The alignment would require removal of 18 or more redwood trees, 5 to 6 of which are directly in front of Campbell Brothers Confusion Hill. The total capital cost to construct Alternative 1 is estimated at $55-70 million.

- **Alternative 2 (white):** This alternative is similar to the black alignment and relocates US 101 via construction of two bridges and a through-cut. The white alignment begins south of the black alignment and includes a slight realignment of an existing compound curve. An approximately 100 m (328 ft) long, 2 to 7 m (6.5 to 23 ft) high retaining wall would need to be constructed at the curve. This alignment would require removal of 4 to 5 redwood trees, and US 101 would diverge from its present alignment approximately 80 m south of Campbell Brothers Confusion Hill. An at-grade intersection would be constructed to maintain access to the Redwoods River Resort and the Campbell Brothers property. The total capital cost to construct Alternative 2 is estimated at $50-65 million.

- **Alternative 3 (blue):** This alternative also includes relocating US 101 via construction of two bridges and a through-cut, but the project limits extend to improving an existing compound curve at the south end of the project. The blue alignment would require acquisition of a portion of the Redwoods River Resort, including the removal of a residence, lodge and store, and realign US 101 away from the Campbell Brothers property. An at-grade intersection would be constructed to maintain access to the Redwoods River Resort and the Campbell Brothers Confusion Hill properties. This alignment would also require removal of 4 to 5 redwood trees. The total capital cost to construct Alternative 3 is estimated at $55-70 million.

- *Alternatives Likely To Be Dropped From Further Consideration*

Based upon the estimated project cost of greater than $25 million, a Value Analysis Study was performed. The Value Analysis Study considered all alternatives discussed here, and recommended Alternative 2 (white alignment) to Caltrans District Executive Staff as their preferred alternative for advance design. As a result, it is likely that the alternatives below will be dropped from further detailed study.

- **Alternative 4 (red):** This alignment is similar to the blue alignment. The red alignment begins directly north of the Tree House with the southern portion of the alignment proceeding

through the middle of Redwoods River Resort (RRR). This project would necessitate removal of 40 to 45 redwood trees. An at-grade intersection would be constructed to maintain access to the Campbell Brothers Confusion Hill. The total capital cost to construct Alternative 4 is estimated at $75-90 million.

- **Alternative 5 (green):** This alignment is similar to the blue alignment, but the southern portion of the alignment requires a large cut slope east of the existing facility impacting 45 to 50 redwood trees. US 101 would be moved nearly 90 m (295 ft) away from Campbell Brothers Confusion Hill. The total capital cost to construct Alternative 5 is estimated at $55 - 70 million.

- **Alternative 6 (existing/purple alignment):** This alternative proposes maintaining the existing alignment of US 101 through construction of a large cut slope in an attempt to stabilize the existing Confusion Hill slide. Stabilizing the slide would be attempted by excavating the slope to 1.5:1. This would generate approximately 6 million m^3 (7.85 million yds^3) of disposal and would cost in excess of $150 million. The large cut slope and corresponding removal of more than 180 redwood trees would also result in extensive visual impacts and habitat loss. Unfortunately, the 1.5:1 cut slope would be unlikely to intercept the slide plane and stabilize the slope. Stabilization of the slope could be achieved if the cut slope were laid back at 2:1, but this would generate over 15 million m^3 (19.6 million yds^3) of material and cost in excess of $250 million.

  The option of maintaining the existing US 101 alignment through construction of a structure was also explored. The retaining wall alternative was determined not to be practical because necessary retaining wall tiebacks cannot be constructed to meet the length and strength requirements needed to stabilize the roadway and hillside. The slide is also too wide to span with a viaduct. According to District 1 Geotechnical Design, the slide plane is 24 m (80 ft) to 36 m (120 ft) below the roadway and slide movement cannot be controlled by geotechnical means or by constructing structures.

  Alternative 7 (no build): Under this alternative no work would be performed to address the unreliability of the route at this location, and the current series of closures and repairs would continue.

  Ten closures during the 2002/2003 winter season have discouraged tourists, hindered the movement of goods, kept children and teachers from their schools, impacted emergency response, and has generated a high level of concern for residents needing to use this segment of roadway on a daily basis. A catastrophic slide at Confusion Hill could close US 101 in both directions for 6 months or more. A one-direction closure could cost the traveling public an estimated $1.7 million per month in travel delay and vehicle operating costs. A complete closure could require a 250-mile detour and could cost an estimated $7.1 million per month in travel delay and added vehicle-operating costs. Maintaining US 101 open and in good condition between the San Francisco Bay Area and Oregon is very critical to the economic well being of the North Coast.

The following table summarizes recent roadway restoration costs:

Summary of Roadway Restoration Costs at Confusion Hill

Fiscal Year	Slide Repair Costs	Maintenance Expenditures	Estimated Vehicle Delay Costs	Total Spent
1996/1997	$900,000	$35,000	$595,000	$1,530,000
1997/1998	$0	$110,000	$34,000	$144,000
1998/1999	$0	$42,000	$13,000	$55,000
1999/2000	$0	$33,000	$30,000	$63,000
2000/2001	$3,500,000	$0	$665,000	$4,165,000
2001/2002	$115,000	$0	$8,000	$123,000
2002/2003	$9,100,000	$100,000	$2,090,000	$11,290,000
Total $	**$13,615,000**	**$320,000**	**$3,435,000**	**$17,370,000**

Source: Caltrans District 1 "Confusion Hill Landslides Economic Impact of US-101 Closure"

- *Other Alternatives Considered But Not Explored Further*

The following alternatives were considered as part of the initial study phase of the project, but were not explored further due to an inability to meet the project purpose and need or they were determined infeasible:

o An alternative similar to the Alternative 4 (red alignment) was explored that was further west on the peninsula. The alignment also cut through the Redwoods River Resort Property and impacted 40 to 45 redwood trees. The alignment resulted in extensive excavation, and was determined to result in unacceptable cost and environmental impact.

o An alternative that placed a bridge southeast of the Redwoods River Resort was also determined unacceptable for similar reasons of extensive excavation costs and tree impacts.

o An alternative similar to Alternative 3 (blue alignment) was developed that was further east on the peninsula resulting in a viaduct touching down twice on the peninsula. This alternative was determined to be not feasible since the footings of the viaduct would be founded in a slide.

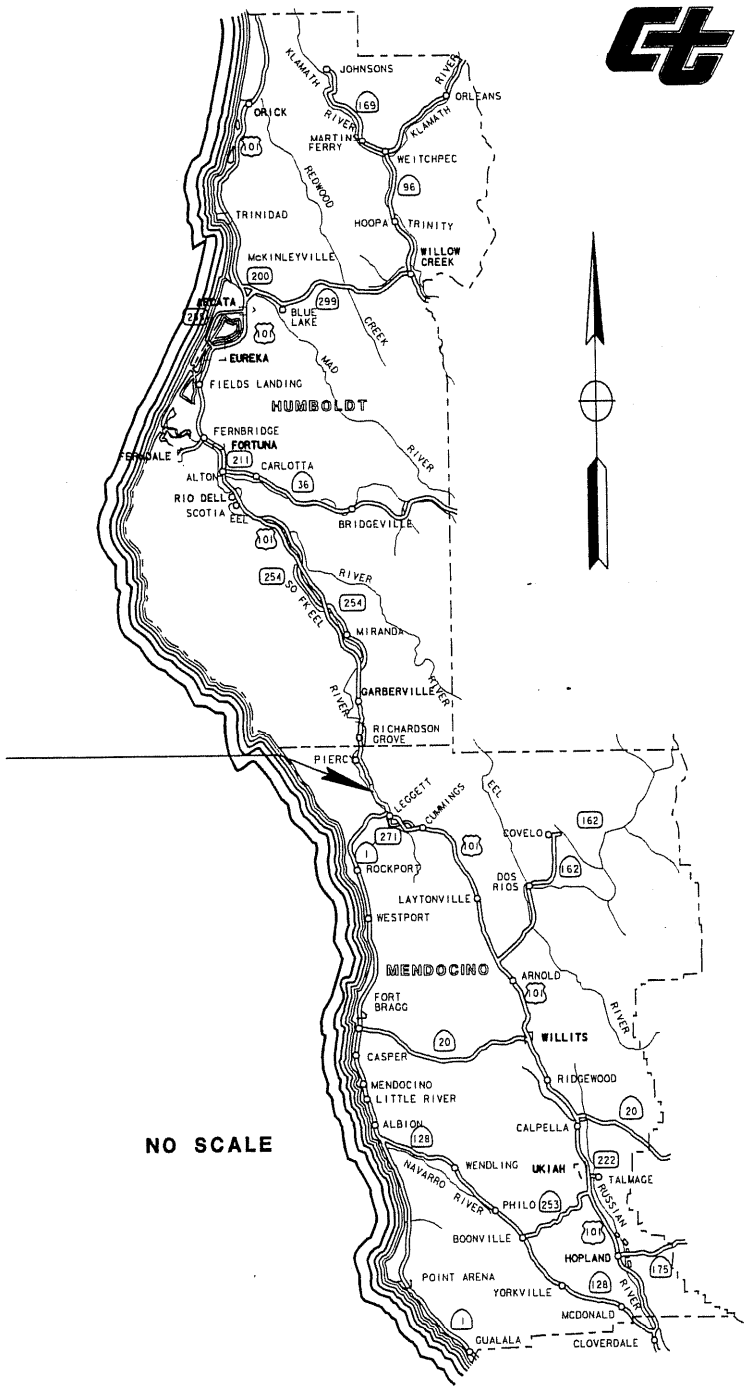
- Shorter realignment alternatives were not explored further because they resulted in placing bridge footings and columns hazardously close to the existing slide area.

Permits and Consultations

The following permits and consultations are anticipated for this project:

- California Department of Fish and Game Streambed Alteration Agreement and California Wild and Scenic River approval
- California Department of Fish and Game California Endangered Species Act Section 2081
- California State Historic Preservation Office
- North Coast Regional Water Quality Control Board Section 401 Certification
- National Pollution Discharge Elimination System (NPDES) compliance
- NOAA-Fisheries Section 7 Consultation
- USFWS Section 7 Consultation
- National Park Service Wild and Scenic River Consultation
- U.S. Army Corps of Engineers Section 404 Permit
- County of Mendocino

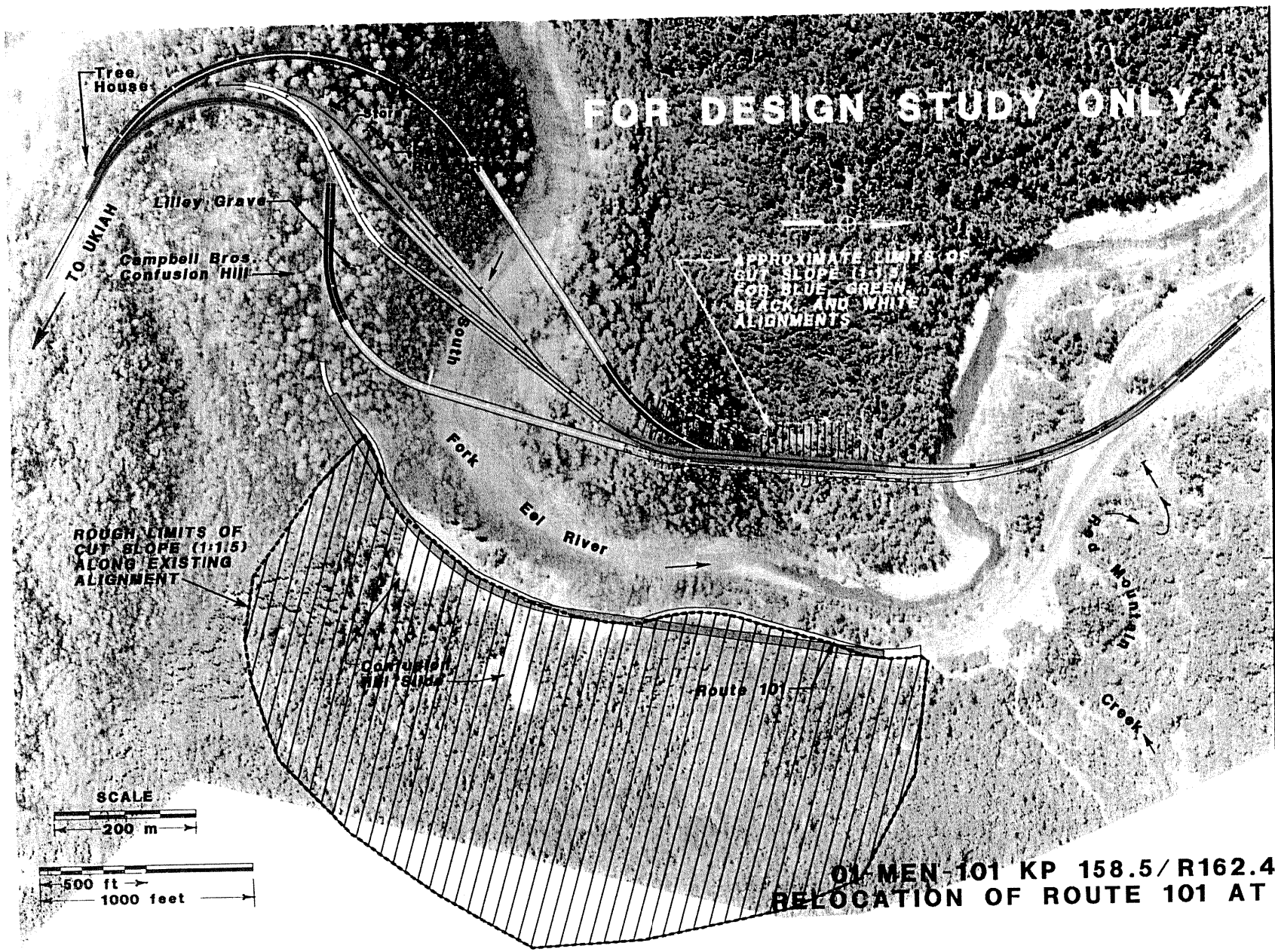
RELOCATION OF ROUTE 101 AT CONFUSION HILL



PROJECT LOCATION

NO SCALE

ATTACHMENT A



01-MEN-101 KP 158.5/R162.4 (PM 98.5/R100.9
RELOCATION OF ROUTE 101 AT CONFUSION HILL
EA 01-397510

Environmental Significance Checklist

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included in Section VI following the checklist. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS -- Would the project: a) Have a substantial adverse effect on a scenic vista?	☐	■	☐	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	■	☐	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	■	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	■	☐

RESPONSE

Relocation of the existing alignment requires two new bridges across the South Fork of the Eel River, a federal and state designated Wild and Scenic river. This part of the river is designated a recreational segment. Crossing the river to the peninsula opposite the current alignment would also require extensive cut and fill on an undeveloped, forested hillside.

Alternative Discussion:

The white, black and blue alternatives appear to have fewer visual impacts compared to the other alternatives. These three alternatives have relatively the same size of cut slope (350 m [1150 ft] by 55 m [180 ft]) to the west of the proposed alignment. The proposed south bridges are relatively similar in size (410 to 420 m long [1345 to 1378 ft] by 45 to 50 m high [148 to 164 ft]) although the south bridge on the black alternative would be slightly longer at 460 m (1509 ft). The north bridges are similar in length and height for all three alternatives. The blue and white

alternatives may have the least impacts to redwoods. The black alternative would require the removal of redwoods, which creates moderate impacts to the visual quality of the redwood grove adjacent to the proposed alignment corridor.

The black and white alternatives will create some impacts to the forest canopy as seen from the Campbell Brothers, Confusion Hill business. Existing forest canopy is moderately dense and with mostly deciduous tree canopy blocking views of the middle and background. Tree removal required for the black and white alternatives will change the tree canopy character between the Campbell Brothers and the top of the bluffs where the southern bridge structure ties into the existing alignment near the southern project limits. The canopy will be less dense and the shade characteristics within the forest setting will be decreased and the forest floor will receive increased solar energy.

The blue alternative would impact views from the Redwood River Resort since it bisects the property adjacent to the main buildings. The white and black alternatives may not visually impact the resort.

The green, red and purple alternatives have more visual impacts compared to the other alternatives. The green alternative would have a high level of impacts to the stand of old growth redwoods near the southern end of the project limits, and could adversely impact the visual quality of the old growth forest grove in that location. The red alternative would have a larger cut slope (660 000 m^3 [863,000 yds^3]) compared to the other 'bridge' alternatives. A redwood grove near the southern end of the project limits would be removed which could adversely impact visual quality. The red alternative would be more visible from a popular recreational area on the Eel River adjacent to the south bridge. This area is also the main recreational site for the Redwood River Resort. The purple alternative has the largest size of cut slope of any alternative except the "no build", requiring at least 6 million m^3 (7.85 million yds^3) of material. The vegetative cover within that area also would be removed creating a large visual scar within the otherwise natural landscape, and revegetation is not likely to be successful.

The following measures to reduce visual impacts will be considered:

- Contouring, benching, slope rounding and using contour variability of cut and fill slopes to blend into existing topography and provide for planting of native vegetation
- Minimize removal of existing vegetation
- Preserve trees adjacent to the proposed bridges
- Aesthetic treatment for the proposed retaining wall on Alternative 2 (white) to blend into the surrounding natural landscape or otherwise be aesthetically pleasing
- Context sensitive bridge design and use of see through bridge railing
- Use of aesthetic or color treatments to enhance the relationship between the proposed bridges and the surrounding landscape
- Consider opportunities for pullouts to allow travelers to stop and view the South Fork Eel River and surrounding landscape
- Preserve rock outcroppings

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

RESPONSE

The project is located in a forested area zoned for timber production, does not contain any farmland, and no agricultural impacts are expected.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

RESPONSE

The project does not propose an expansion of the existing roadway, does not increase capacity, and would not result in an increase of traffic beyond that presently anticipated to occur with the existing alignment and design. Air quality impacts would be temporary, limited to the period of construction, and would not be significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	■	☐	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	■	☐	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	■	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	■	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

RESPONSE

The project proposes two new bridges across the South Fork Eel River, a state and federal designated Wild and Scenic River that contains steelhead, coho salmon and chinook salmon. Between the two bridges the roadway would cross a peninsula that is a steep, wooded hillside vegetated with Douglas fir (*Pseudotsuga menziesii*), California redwood (*Sequoia sempervirens*), canyon live oak (*Quercus chrysolepis*), tanoak (*Lithocarpus densiflorus*), bush tanoak (*Lithocarpus densiflorus* var. *echinoides*) and alder (*Alnus sinuata*). The southern part of the

project area includes alder and associated habitat along the river, and upland stands of California redwood interspersed with Douglas fir, tanoak and Pacific madrone (*Arbutus menziesii*). Also on site are wax myrtle (*Myrica californica*) with a predominate understory of evergreen huckleberry (*Vaccinium ovatum*).

The proposed project could have an effect on old growth redwoods, endangered and threatened species and essential and critical habitat for those listed species. It also may affect wetlands, riparian habitat or other jurisdictional waters of the United States. The project will be analyzed for temporary and permanent impacts to environmental resources within the project limits, including the following threatened species:

- northern spotted owl (*Strix occidentalis caurina*)
- marbled murrelet (*Brachyramphus marmoratus*)
- bald eagle (*Haliaeetus leucocephalus*)
- Northern California steelhead (*Oncorhynchus mykiss*)
- California coastal chinook salmon (*Oncorhynchus tshawytscha*)
- Southern Oregon/Northern California coast coho salmon (*Oncorhynchus kisutch*)
- McDonald's rock-cress (*Arabis macdonaldiana*)
- Red Mountain stonecrop *(Sedum eastwoodiae)*
- Red Mountain buckwheat *(Eriogonum kelloggii)*
- Humboldt milkvetch *(Astragalus agnicdus)*

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	■	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	■
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	■

RESPONSE

The project area contains the following archaeological and historical resources that may be affected by one or more of the proposed alternatives:

1. The Tree House and associated cabins (National Register eligibility likely);
2. Campbell Brothers Confusion Hill Roadside Attraction (National Register eligibility likely);
3. Minnie Stoddard-Lilley's grave and surrounding redwood trees (National Register eligibility likely);
4. Historic-period homestead structures (significance unknown);
5. Prehistoric Archaeological Site (significance unknown);

All alternatives (except the purple) would require extended Phase 1 Archaeological "presence/absence" testing and recordation for the historic-period homestead and prehistoric archaeological site. Phase 1 involves intensive surface survey, and randomly spaced shovel test pits excavated 10 to 100 centimeters (4 to 39 in) in depth in order to determine the horizontal and vertical boundaries the cultural resources.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	■
ii) Strong seismic ground shaking?	☐	■	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☐	■	☐	☐
iv) Landslides?	☐	■	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	■
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	■
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	■
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	■

RESPONSE

The project is located in the west portion of the northern Coast Ranges Geomorphic province, northwest-trending mountain ranges and valleys, subparallel to the San Andreas Fault. Strata dip beneath alluvium of the Great Valley to the east, and to the west is the Pacific Ocean. The Coast Ranges are composed of thick Mesozoic and Cenozoic sedimentary strata. The northern Coast Ranges are dominated by irregular, knobby, landslide-topography of the Franciscan Complex. The eastern border is characterized by strike-ridges and valleys in Upper Mesozoic strata.

The geologic foundation within the project limits consists Mesozoic sedimentary rocks of Franciscan assemblage with areas of bedded sandstone, massive sandstone and areas of 50% shale, 50 sandstone. On the peninsula are two areas identified as an older inactive landslide, and another that indicates an active landslide. The area also includes areas of River Terrace deposits of varying age. To analyze the area and design the project to reduce potential impacts, further evaluation will be necessary, including collection of data through geotechnical borings and seismic refraction studies.

Soils in the project area are identified as Ornbaun-Zeni-Yellowhound. This soil unit is characterized as deep and moderately deep, strongly sloping to very steep, well drained soils that formed in material weathered from sandstone; on hills and mountains. The vegetation is mainly Douglas-fir and redwood. The average annual precipitation ranges from 1016 to 1778 mm (40 to 70 in), the average annual air temperature is about 12 degrees C (53 degrees F), and the average frost-free season is 220 to 320 days. A strong marine influence minimizes seasonal fluctuation in air temperature and thus results in little fluctuation in soil temperature.

This soil unit is about 30 percent Ornbaun soils, 20 percent Zeni soils, 20 percent Yellowhound soils, and 30 percent soils and miscellaneous areas of minor extent.

- Ornbaun soils are deep, typically the surface layer is loam, and the subsoil is loam or clay loam. Soft sandstone bedrock is at a depth of 1016 to 1524 mm (40 to 60 in). Slope ranges from 9 to 75 percent.

- Zeni soils are moderately deep, typically the surface layer is loam, and it is underlain by a subsoil of loam. Soft sandstone bedrock is at a depth of 508 to 1016 mm (20 to 40 in). Slope ranges from 9 to 75 percent.

- Yellowhound soils are deep, typically the surface layer is gravelly loam, and the subsoil is extremely gravelly loam. Hard sandstone bedrock is at a depth of 1016 to 1524 mm (40 to 60 in). Slope ranges from 9 to 99 percent.

Of minor extent in this unit are Comptche, Frenchman, Gschwend, Kibesillah, Threechop, and Woodin soils. Also included are areas of Riverwash and areas of water.

VII. HAZARDS AND HAZARDOUS MATERIALS – Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	■
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	■
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	■
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	■

RESPONSE

An Initial Site Assessment (ISA) was performed for this project. According to North Region Hazardous Waste Office, the work location is not listed on the 2001 *Hazardous Waste and Substances Site List*. The ISA suggests the project could have hazardous waste issues. Where an alternative involves right-of-way acquisition of property containing older structures, the structures would need to be surveyed for lead-based paints and asbestos-containing materials, and any other hazardous materials. If yellow thermoplastic stripe is removed from the pavement surface, construction contract provisions for removal and disposal of the traffic stripe shall be included in the special provisions. Upon selection of the preferred alternative, an updated ISA will be provided.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
VIII. HYDROLOGY AND WATER QUALITY -- Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	■	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	■
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	■	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	■	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	■	☐
f) Otherwise substantially degrade water quality?	☐	☐	☐	■
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	■
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	■
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	■
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	■

RESPONSE

This project will be designed in conformance with the National Pollutant Discharge Elimination System (NPDES) requirements. The Caltrans Storm Water Quality Handbook – Project Planning and Design Guide (September 2002) – will be used to determine which Best Management Practices (BMPs) will be employed on the project. Management practices that will reduce or eliminate run-off of sediment from the proposed work area during construction will be given priority consideration on this project.

The goal for both bridge structures is to have all foundations located outside of Ordinary High Water (OHW) and outside the 100 year floodplain if possible.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
IX. LAND USE AND PLANNING - Would the project:				
a) Physically divide an established community?	☐	☐	☐	■
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	■	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	■

RESPONSE

At the south end of the project are three existing businesses and two vacant parcels zoned Rural Community (RC) which allows for a variety of commercial uses. The existing commercial uses are the Tree House, Redwoods River Resort and the Campbell Brothers, Confusion Hill. The remainder of the project area is zoned and used for timber production.

All alternatives that propose crossing the peninsula have the potential to provide public road access to an undeveloped and isolated area. This has the potential for significant impacts unless measures are considered to limit opportunities for roadway encroachments that could lead to development on the west side of the river.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	■
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	■

RESPONSE

Within the project limits there are no known mineral resources or sites designated or planned for such purposes, and no impacts are expected.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XI. NOISE –				
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	■	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	■	☐	☐

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

RESPONSE

Construction activities will temporarily increase noise levels within the project limits. Mitigation measures will be evaluated to reduce impacts from construction noise to a level that would not be significant. Traffic on US 101 is the primary source of noise within the project limits. Realignment would relocate the source of that noise, but is not expected to result in a significant change.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XII. POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	■	☐	☐	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

RESPONSE

Any alternative that crosses the peninsula would be a new public road to an area that is currently inaccessible to the public. This could contribute to planning and zoning changes that could accommodate new development on properties in the area. This raises cumulative impact issues that must be addressed.

Some alternatives could result in displacement of existing residents at the southern end of the project, although the number of housing units and people potentially affected would not appear to be substantial. If the project results in displacement, relocation assistance would be provided.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XIII. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	■	☐
Police protection?	☐	☐	☐	■
Schools?	☐	☐	☐	■
Parks?	☐	☐	☐	■
Other public facilities?	☐	☐	☐	■

RESPONSE

The alignment and construction of the north bridge may affect helicopter access to a water source during fire emergencies. This needs to be evaluated to determine the level of impact.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XIV. RECREATION –				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	■	☐

RESPONSE

Some proposed alternatives could result in the full or partial acquisition of a private campground/RV park. Relocation assistance would be provided, but replacement may not be possible within the area. The potential for including a vista point or turnout within the project area also may be considered.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XV. TRANSPORTATION/TRAFFIC -- Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☒
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Result in inadequate parking capacity?	☐	☐	☐	☒
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

RESPONSE

This segment of US 101 is a curvilinear alignment with curves having a design speed as low as 50 km/hr (30 mph). Lane widths are typically 3.6 m (12 ft). Paved shoulder widths are less than 1.2 m (4 ft) wide with some locations having no paved shoulder. All the alternatives proposed include constructing a new facility with two 3.6 m (12 ft) travel lanes and 2.4 m (8 ft) outside shoulders. The table below provides a summary of existing and proposed roadway dimensions:

	Existing	Proposed
Shoulder Width	0 – 1.2 m (0 – 4 ft)	2.4 m (8 ft)
Lane Width	3.6 m (12 ft)	3.6 m (12 ft)
Curve Radii	100 – 600 m (328 - 1970 ft)	135 - 600 m (443 – 1970 ft)

An advisory exception for slopes would be required for all of the proposed alternatives. Fill slopes would be constructed at a ratio of 1:2 as opposed to the 1:4 required in the Caltrans Highway Design Manual.

The District 1 Route Concept Report for US 101, dated October 2002, states that the concept for the segment of MEN 101 from KP 145.5 to R162.7 (PM 90.4/101.1) is to retain the existing facility as a two-lane conventional highway. Any alternative selected for this project must meet the Route Concept for this segment of highway.

The project does not increase capacity, and would not result in an increase of traffic volumes beyond existing levels or those projected to occur with the existing alignment and design. There would be some temporary impacts limited to the period of construction, and these would not be significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI. UTILITIES AND SERVICE SYSTEMS –				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	■
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	■
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	■	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	■
e) Result in a determination by the wastewater treatment	☐	☐	☐	■

provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? ☐ ☐ ■ ☐

g) Comply with federal, state, and local statutes and regulations related to solid waste? ☐ ☐ ☐ ■

RESPONSE

The project would include new drainage facilities, and require a disposal site for excess materials generated by the through-cut on the peninsula and the north bridge approach.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE –

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? ■ ☐ ☐ ☐

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? ☐ ■ ☐ ☐

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? ☐ ☐ ■ ☐